

IR3-H2 Triple IR Hydrogen Flame Detector

The IR3-H2 flame detector provides ultra-fast response, high performance and reliable detection for a number of fires found in Energy Transition applications, such as hydrogen, methane, syngas, ammonia and methanol.

The detector addresses slow growing fires as well as fast eruptions of fire using improved IR3 technology. The detector operates in all weather and light conditions.

These features, along with the built-in event logger, provide additional means to study the cause and development of fire events.

KEY BENEFITS

- High immunity to false alarm, including arc welding
- Ultra-fast mode detection within 40 milliseconds for Hydrogen fireballs or explosions
- Detects hydrogen, ammonia, methane & syngas flames using three infrared wavelengths, with clear separation
- Five selectable sensitivity levels
- Event logger: Alarms & Faults are logged to non-volatile memory
- Built-in-Test (BIT) - Automatic and manual self-test of window cleanliness and overall detector operation
- HART[®] 7 for configuration & maintenance - option available
- Window heater to avoid condensation and icing
- Stainless steel tilt mount with horizontal and vertical adjustment
- SIL 2 capable option available



ORDERING

FIK-IR3-H2-AS11	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, standard configuration
FIK-IR3-H2-AS21	IR3 Hydrogen Flame Detector, SS316, 2 x ¾" NPT entries, standard configuration
FIK-IR3-H2-AS11-H	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, process industry (SIL 2-HART®)
FIK-IR3-H2-AS21-H	IR3 Hydrogen Flame Detector, SS316, 2 x ¾" NPT entries, process industry (SIL 2-HART®)
FIK-IR3-H2-AS15	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, NFPA 33 (SIL 2-HART®) ¹
FIK-IR3-H2-AS25	IR3 Hydrogen Flame Detector, SS316, 2 x ¾" NPT entries, NFPA 33 (SIL 2-HART®) ¹
ACCESSORIES	
FIK-TMO-S01	Tilt Mount, Stainless Steel (shown above)
FIK-WCO-S01	Weather Cover, SS316, Standard Detector
FIK-PMA-S23	Pole Mount Adapter, 2 and 3 inch
FIK-PMA-S06	Pole Mount Adapter, 6 inch
FIK-ASD-S01	AIRSHIELD, Standard Detector ²
FIK-DMX-S01	Duct Mount Assembly without Window, Standard Detector ³
FIK-DMW-S01	Duct Mount Assembly with Sapphire Window, Standard Detector ⁴
FIK-FSIM-IR3-H2-KIT	Flame Simulator Kit, IR3-H2 Detector
FIK-USB/RS485	USB/RS485 Converter Kit ⁵

¹ Automotive/Spray Booth

² Provides protection against dust, snow and other interferences.

³ Use with FIK-ASD-S01 (sold separately), tilt mount NOT needed.

⁴ Tilt mount NOT needed.

⁵ For PC/Laptop USB port. Includes FLS Flame Detector Communicator software.

SPECIFICATIONS

FIRE DETECTION	Detection time and distance	40ms for fast burst or explosion 1.5s for 32" (0.8m) hydrogen fire at 0-66 ft. (0-20m) 4s for 32" (0.8m) hydrogen fire at 66-100 ft. (20-30m)
	Sensitivity Range	Extreme, High, Medium, Low, Very Low
	Field of view (IR detection)	90° Horizontal, 75° Vertical
	Time Delay	0-30 seconds (adjustable)
	Built in Test	Automatic or Manual
ELECTRICAL SPECIFICATIONS	Operating Voltage	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 120mA Maximum: 180mA all systems in operation (including window heater)
	Conduit Entries	2x cable and conduit entries 3/4" NPT(F) or M25x1.5
	Wiring	12-20AWG (4.0-0.50mm ²)
OUTPUTS	Relays	SPST volt-free contacts rated 2A @ 30 VDC 3 relays: Alarm & Auxiliary (NO); Fault (NC)
	0-20mA (stepped) current output	3 wire and 4 wire (isolated) configurations (sink and source)
	Indication	Tri-color LED
	Modbus	RTU compatible on RS-485
	HART-7 (rev 7.0)	FSK modulation signals via 4-20mA Current Loop Cables
MECHANICAL SPECIFICATIONS	Size	5.51 x 3.54 x 3.54" (140 x 90 x 90mm)
	Weight	Detector (stainless steel 316): 6.6 lbs. (3.0 kg) Tilt mount (stainless steel 316): 3.3 lbs. (1.5 kg)
ENVIRONMENTAL SPECIFICATIONS	Temperature Range	Operating: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	Humidity	Up to 99% (RH), non-condensing
	Ingress Protection	IP66 & 68 (2m, 24hr); NEMA 4X & 6P
APPROVALS*	ATEX	II 2 G D Ex db IIC T5 Gb or Ex db eb IIC T5 Gb and Ex tb IIIC T95°C Db - 55°C<Ta<75°C Ex db IIC T4 Gb or Ex db eb IIC T4 Gb and Ex tb IIIC T105°C Db - 55°C<Ta<85°C
	IECEX, Inmetro	Ex db IIC T5 Gb -50°C ≤ Ta ≤ 75°C Ex db IIC T4 Gb -50°C ≤ Ta ≤ 85°C
	FM & FMC	Class I, Div. 1, Groups B, C & D; T4 Class I, Zone 1, AEx/Ex db IIC T4 Gb T4 -50°C ≤ Ta ≤ 85°C T5 -50°C ≤ Ta ≤ 75°C
	CSFM	Listed: 7210-2010:0525
	Performance	ANSI FM 3260
	Functional Safety	Meets requirements for SIL 2 per IEC 61508 (option available)
	WARRANTY	5 Years

*All products designed and tested to relevant approval standards.

IMMUNITY TO FALSE ALARMS AT EXTREME SENSITIVITY (modulated/unmodulated)

False Alarm Source	Maximum Distance in ft. (m)
Sunlight, Direct, Reflected	No response at any distance
Sunlight, Direct, Reflected, with water drops on sensors	No response at any distance
Incandescent frosted glass light, 300W	2.0 (0.5)
Fluorescent, 70W (3x23.3W)	2.0 (0.5)
Electric arc	3.0 (1.0)
Arc welding	2.0 (0.5)
Radiation heater, 1850W	2.0 (0.5)
Radiation Heater, 1850W with water droplets on sensors	2.0 (0.5)
Quartz lamp (1000W) shielded	2.0 (0.5)
Quartz lamp (500W) non-shielded	2.0 (0.5)
Mercury vapor lamp 160Wx3	2.0 (0.5)
Car Exhausts	2.0 (0.5)
Projector LED	2.0 (0.5)
Solenoid bell	2.0 (0.5)
Soldering iron	2.0 (0.5)
Electric Drill	2.0 (0.5)

RESPONSE CHARACTERISTICS, FIK-IR3-H2-ASX1 (Standard Model)

Fuel	Size	Sensitivity	Distance ft. (m)	Average Response Time (seconds)
Hydrogen (H ₂)	32-in Plume	Extreme	98 (30)	1.5
Hydrogen (H ₂)	32-in Plume	Medium	66 (20)	1.5
Hydrogen (H ₂)	32-in Plume	Low	66 (20)	1.4
Hydrogen (H ₂)	32-in Plume	Very Low	16 (5)	1.5
Methanol	1 x 1 ft.	Extreme	59 (18)	4.2
Methanol	1 x 1 ft.	Medium	30 (9)	2.9
Methanol	1 x 1 ft.	Very Low	10 (3)	4.9
Methane	32-in Plume	Extreme	66 (20)	1.7
Methane	32-in Plume	Medium	66 (20)	1.2
Methane	32-in Plume	Low	66 (20)	1.4
Methane	32-in Plume	Very Low	13 (4)	0.9
Syngas (30%CH ₄ :70%H ₂)	32-in Plume	Extreme	82 (25)	3.0
Syngas (30%CH ₄ :70%H ₂)	32-in Plume	Medium	82 (25)	3.0
Syngas (30%CH ₄ :70%H ₂)	32-in Plume	Low	82 (25)	0.8
Syngas (30%CH ₄ :70%H ₂)	32-in Plume	Very Low	13 (4)	2.1

For performance details of model 5, the following documents are available on request:

- Model 5 - fast response enclosed space / automotive / spray paint booth applications: F101V0023.06.



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